

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1-20 (Cancelled)

21. (Currently Amended) The system of ~~claim 20~~ claim 51, the support being formed of a shape memory alloy operative to urge the prosthesis to the second condition.

22. (Currently Amended) The system of ~~claim 20~~ claim 51, the support further comprising a plurality of elongated support features that extend generally axially between ends of the support, biasing elements interconnecting adjacent support features in a circumscribing relationship around the valve, the biasing elements urging the interconnected adjacent support features apart from each other, so as to urge the prosthesis toward the second condition.

23. (Original) The system of claim 22, further comprising at least one connecting element operative to hold the biasing elements in a generally circular array and to limit the radial outward expansion of the prosthesis at the location of the circular array.

24. (Original) The system of claim 22, further comprising a plurality of resilient projections that extend radially outwardly from the axially opposed ends of the support.

25. (Original) The system of claim 24, the projections further comprising a set of triangular projections attached to each of the opposed ends of the support by biasing elements that bias the triangular projections to extend axially and radially outwardly from each of the respective opposed ends of the support.

26. (Original) The system of claim 22, the support features and the biasing elements being formed of a continuous length of a substantially resilient and elastic material that facilitates expansion of the prosthesis from the first condition to the second condition.

27. (Currently Amended) The system of ~~claim 20~~ claim 51, further comprising an outer sheath of a substantially biocompatible material that covers exposed parts of the support.

28. (Currently Amended) The system of ~~claim 20~~ claim 51 wherein the valve further comprises a pulmonic animal heart valve having leaflets located within a valve wall to permit substantially unidirectional flow of blood through the valve, the support engaging an outer surface of the valve wall.

29-49 (Cancelled)

50. (Cancelled)

51. (Currently Amended) An implantation system, comprising:
an elongated cylindrical member having spaced apart ends, at least one of the
ends providing an opening;

a body portion from which the cylindrical member extends to terminate in the
opening spaced apart from the body portion, the body portion having a greater outer diameter
than the cylindrical member, the cylindrical member having an inner diameter in a range from
about 5 mm to about 15 mm, and the body portion having a diameter that is greater than that of
the cylindrical member, The system of claim 49, the cylindrical member and body portion being
substantially coaxial along a linear axis extending through the implanter cylindrical member and
the body portion;

a heart valve prosthesis including a generally cylindrical support having axially
spaced apart ends, a valve mounted within the support at a fixed axial position between the
spaced apart ends of the support, the prosthesis being deformable to a first condition in which the
prosthesis has a reduced cross-sectional dimension, the support being biased to expand the
prosthesis radially outwardly from the first condition to a second condition in which the
prosthesis has a cross-sectional dimension that is greater than the reduced cross-sectional
dimension, the prosthesis being mounted within the cylindrical member in the first condition;
and

a plunger operative to traverse at least part of the cylindrical member and urge the prosthesis from the cylindrical member through the opening.

52. (Previously Presented) The system of claim 51, further comprising indicia along an exterior portion of the cylindrical member to facilitate implantation of the heart valve prosthesis.

Claims 53-60 (Cancelled)

61. (New) The system of claim 51, wherein the valve comprises a natural tissue heart valve mounted within the support.

62. (New) An implantation system, comprising:

an implanter comprising:

an elongated cylindrical member having spaced apart ends and a lumen extending through the cylindrical member, at least one of the ends providing an opening into the lumen;

a body portion having a greater outer diameter than the cylindrical member, the cylindrical member extending from the body portion to terminate in the opening spaced apart from the body portion, the cylindrical member and body portion being substantially coaxial along a linear axis that extends through the implanter;

a plunger operative to traverse at least part of the lumen along the linear axis; and
a heart valve prosthesis comprising:

a generally cylindrical support having axially spaced apart ends, and

a valve mounted within the support, the prosthesis being deformable to a first condition in which the prosthesis has a reduced cross-sectional dimension and being expandable from the first condition to a second condition in which the prosthesis has a cross-sectional dimension that is greater than the reduced cross-sectional dimension, the prosthesis being mounted within the cylindrical member in the first condition, such that the plunger is operative to traverse at least part of the cylindrical member and urge the prosthesis from the cylindrical member through the opening.

63. (New) The implantation system of claim 62, the cylindrical member of the implanter having an inner diameter in a range from about 5 mm to about 15 mm, and the body portion having a diameter that is greater than that of the cylindrical enclosure.

64. (New) The implantation system of claim 62, the implanter further comprising a handle portion attached to and extending radially outwardly from the body portion at a position that is spaced axially from an end of the body portion from which the cylindrical member enclosure extends.

65. (New) The implantation system of claim 63, wherein the support of the prosthesis further comprises axially extending support features interconnected by biasing elements that bias the support to expand radially outwardly from the first condition to the second condition.

66. (New) The implantation system of claim 65, the biasing elements further comprising springs arranged in a generally circular array at the opposed ends of the support, the springs interconnecting adjacent support features to bias the support radially outwardly.

67. (New) The implantation system of claim 62, wherein the valve comprises a natural tissue heart valve mounted within the support.

68. (New) The implantation system of claim 62, the prosthesis further comprising a flexible connecting element attached to the support to inhibit radial outward expansion of at least part of the support beyond a predetermined amount.

69. (New) The implantation system of claim 68, the prosthesis further comprising a loop of a flexible material connected to the support at each of the axially spaced apart ends to inhibit radial outward expansion of the support at the opposed ends beyond a predetermined amount.

70. (New) The implantation system of claim 63, the prosthesis further comprising projections biased to extend radially outwardly from the support.